

***Engineering Report:***

Lassen National Forest

Eagle Lake Ranger District

Analysis of

National Forest System Road (NFSR)

**# 32N22**

for Motorized Mixed Use Designation

Forest: Lassen

District: Eagle Lake

Road Number: 32N22

Road Name: Westwood Logging Road

**Introduction:** This report documents the engineering analysis for two segments of the “Westwood Logging Road”, totaling 0.4 miles in length. NFSR 32N22 is located near Bogard Buttes, and connects California State Highway Route 44 with Lassen County Road A-21. Lassen National Forest (LNF) currently manages this road as open only to highway-legal vehicles.

The study segments were recommended in the LNF Travel Analysis (2008) for an engineering analysis of motorized mixed use. The purpose of this engineering analysis is to investigate the potentials, and associated risks, for transporting both highway-legal vehicles (motor vehicles, including the operators, that are licensed or certified for general operation on public roads within the State) and non-highway-legal vehicles (motor vehicles, including the operators, that are not licensed or certified for general operation on public roads within the State) from the beginning termini to the end termini.

The LNF Travel Analysis identified these road sections as potential connections for recreational off-highway vehicle (OHV) loop opportunities on the adjacent road network, which is currently managed as open to non-highway-legal vehicle use. In the vicinity, a segment of Distinctive Route 10 (NFSR 32N10) was also recommended for an engineering analysis of motorized mixed use. The results can be found in a separate engineering report.

**Study Segment road data from the forest transportation atlas:**

Segment 1: Beginning Mile Post: 1.2 Ending Mile Post: 1.4

Segment 2: Beginning Mile Post: 2.2 Ending Mile Post: 2.4

*The following applies to both segments:*

Traffic Service Level: ☐ A ☐ B ☒ C ☐ D

Objective Maintenance Level: ☐ 1 ☐ 2 ☒ 3 ☐ 4 ☐ 5

Operational Maintenance Level: ☐ 1 ☐ 2 ☒ 3 ☐ 4 ☐ 5

Maintenance by: **Forest Service (FS)**

Non-Forest Service ROW or jurisdiction? ☐ Yes ☒ No

Any road use agreements, maintenance agreements, or other encumbrances?

☒ Yes ☐ No

Description of agreements or encumbrances:

The Forest Service (USA) has been granted an unlimited exclusive easement over Fruit Growers Supply Company land. This overlaps with segment 1. Fruit Growers Supply Co. has been granted limited non-exclusive easements over Forest Service (USA), which involve both segments.

Subject to Highway Safety Act? ☒ Yes ☐ No

Non-highway-legal vehicles currently permitted? ☐ Yes ☒ No

Would motorized mixed use be consistent with State and local laws?

☒ Yes ☐ No

The proposed segment would be consistent with California Vehicle Code (CVC), Combined Use Highways Designation (CVC Division 16.5, Chapter 2, Article 1, Section 38026) if limited to less than 3 consecutive miles on maintenance level 3+ roadways. Based on the CVC and Forest Service Region 5 guidelines, the designation of motorized mixed use requires California Highway Patrol notification prior to designation. Based on the response from the CHP commissioner, the Forest may reconsider the decision to designate MMU and/or may adjust mitigation measures needed for implementation.

Description of road management objectives (RMOs), existing use, and proposed use:

The road currently serves as a collector road and provides a connection between California State Highway Route 44 and Lassen County Road A-21.

The road was designed as a single-lane road but now is nearly double-lane (width varied from 19' to 25') with periodic turnouts.

NFSR 32N22 has traditionally served administration of the LNF, including fuels and vegetation management, commodity extraction, fire suppression, and recreation. It also serves as an access and haul route for Fruit Growers Supply Company.

The road is considered a highway by the forest service and is managed in accordance with the Highway Safety Act. The road is managed for passenger car vehicles and is appropriately posted with horizontal route identification markers. Most of the year it is currently managed as open only to highway-legal vehicles; however, when snow-covered the road provides winter use including skiers, atvs, and snowmobiles.

The study segment is proposed for designation of motorized mixed use to allow both highway-legal and non-highway-legal vehicles to utilize the roadway. Operators of any motor vehicle would be required to be in possession of a valid state driver's license.



### General Considerations:

All motor vehicle operators need to be cognizant of the applicable state laws, and how they pertain to each age group, vehicle type, and national forest system road classification (see next bullet).

Through authorities delegated by the Secretary, the Forest Service may restrict or control use to meet road management objectives (36 CFR 212.5). The LNF currently manages this road as a highway, in accordance with the Highway Safety Act. The road is therefore subject to the provisions of the California Vehicle Code (CVC) for highways.

State OHV Regulations: any motor vehicle must have a street-legal license plate to operate on highways. To operate on public lands, off of highways, motor vehicles must have either a street-legal license plate or a red sticker or a green sticker. For more information, see the CA State Parks Off-Highway Motor Vehicle Recreation site, available @ <http://ohv.parks.ca.gov/>

California has:

- requirements for ATV safety
- conditions for operating ATVs
- OHV equipment requirements
- OHV operation requirements

### **Summary of Findings:**

Implementing the universal mitigation measures, especially improving sight distance by removing brush, maintaining proper signing, and providing better communication, will reduce crash probability.

Road hazard mitigation should be prioritized regardless of mixed use, along with implementing a comprehensive communication, management, and enforcement plan. Associated implementation costs will depend on the designated allowed

The road is maintained to a standard allowing efficient passenger car through traffic at speeds up to 40 mph for reasonable and prudent drivers on straightaways. Based on speeds and their associated risk for crash severity, designating the road as open only to highway-legal vehicles will provide the lowest crash probability and severity.

## Factors Considered:

### 1. Operator considerations:

- Based on engineering judgment and experience/observation on other national forest management units, the LNF has an above average standard of road. Culverts are common drainage features on maintenance level 2 roads and standard on maintenance level 3 roads. Often roads on this national forest could be classified one maintenance level higher.
- Allowing non-highway-legal vehicles to use the road segments can involve both non-highway-legal equipment and non-licensed operators, including children.
- In California, children under the age of 18 must take a prescribed safety course, be under direct supervision of an adult possessing appropriate safety certificate, or possess the appropriate safety certificate in order to operate an ATV. In addition, children under the age of 14 cannot operate an ATV without direct supervision by parent, guardian, or authorized adult.
- The current use on NFSR 32N22 appears to be consistent with State law and Forest Service policy for operational maintenance level 3 roads.
- The roadbed is raised and appears to provide for sufficient drainage and passenger car travel.

### 2. Crash history:

At the time of this analysis, there is no record of a crash on this road.

### 3. Observed Traffic volume and type:

Non-highway-legal vehicles:

☐ < 12 inch tread width   ☐ < 50 inch tread width   ☐ >50 inch tread width

Highway-legal vehicles:

☐ < 12 inch tread width   ☐ < 50 inch tread width   ☐ >50 inch tread width

☐ Passenger cars   ☐ Commercial vehicles   ☐ Recreation vehicles (RV's)

Vehicle distribution from an observation, 6/25/08 @ 1900-1945 & 6/29/08 @.1220-1300

None observed

4. Speed - Anticipated average speed (85<sup>th</sup> percentile):

*The road segments were driven at various speeds to simulate conditions encountered by a reasonable and prudent driver in a passenger car.*

40 mph based on observation and engineering judgment.

5. Road surface type: coordinate

Aggregate, well maintained

6. Intersections with other roads and trails:

The sight distances at the intersections are rated fair to good. The intersection with NFSR 32N29 could use some sight distance clearing and minor tree removal. The unauthorized road that connects with segment 1 was not found; without improvement work to define this route users would be expected to continue following NFSR 32N22 beyond the study segment.

7. Other roadway factors:

- Roadway alignment was adequate for the assigned maintenance level; however, a vertical curve did limit sight distance and needs to be maneuvered at a safe speed.
- There is evidence of past forest management and vegetation treatments along the route, on both NFS lands and private lands.

8. Roadside conditions:

- The route identification marker at SR-44 incorrectly identifies the road as a maintenance level 2 road (vertical marker).
- The embankments were gentle.
- Double ditches were constructed throughout most of the study segment.
- Small trees ( ,12") were found encroaching along the shoulders.
- Larger trees (>24") are located along the segments outside of clearing limits.

9. Risk without mitigation if designating the roadway "open to all motor vehicles":

**Both segments:**

Crash probability: ☐ High ☒ Med ☐ Low

Crash severity: ☒ High ☐ Med ☐ Low

Crash probability was assessed based on factors including:

- Operator considerations, traffic volume, rates of speed, alignment, sight distance, traveled way surface and width, drainage, roadside conditions.

Crash severity was assessed based on factors including:

- Roadway geometry (embankments, slopes, horizontal and vertical alignments), speed, traffic types and difference in vehicle sizes, difference in speeds of OHVs and full-size passenger vehicles, potential path and objects encountered if a vehicle left the traveled way.

**Alternatives and Mitigation Measures:**

Alternatives and mitigation measures are presented to assist with safe road management. They are to be considered, should the agency have the appropriate time, workload, and funding based on competing priorities.

For all situations, the following mitigation measures apply:

- Clear communication and education to the visitors on allowed uses, safe motor vehicle use, and natural resources (informational signing and kiosks, maps, website, etc.).
- Improved route identification signing. Repair and replace devices as

- Clear brush and trees, especially along curves and at intersections, to improve sight distance.  
*warning: improved sight distance may result in higher speeds*
- Remove of roadside hazards such as boulders, trees, and debris.
- Combine the appropriate enforcement measures with the allowed uses for the road.
- Coordinate with other agencies to improve enforcement consistency.
- Utilize a monitoring program to better determine the appropriate management strategy for the types of use, new technologies, changes in visitor demands, and resource protection measures.

In addition, these mitigation measures would apply to the following alternatives. Although the following alternatives are not comprehensive for the situation, they represent the most likely and/or practical options based on engineering judgment.

**Alternative 1:** Designate the road segments as “open to highway-legal vehicles only”. Continue to manage the road in accordance with maintenance level 4 standards.

- Maintain all roadway signing to MUTCD standards.
- Consider designing new trails, a new trailhead, and/or a new camping area to provide better opportunities for non-highway legal motor vehicle traffic to access the area and the adjacent maintenance level 2 roads.
- Approximate Implementation Cost: \$ 0
- Expected risk:

Crash probability: ☐ High ☐ Med ☒ Low

Crash severity: ☐ High ☒ Med ☐ Low

**Alternative 2:** Designate the road segment as “open to all motor vehicles”, including highway legal and non-highway-legal vehicles. Continue to maintain the road in accordance with maintenance level 4 standards.

- Work with Fruit Growers Supply Company to modify the various

- Improve education and enforcement communication to explain the complexities of various allowed uses on the road.
- Install appropriate signs of a type approved by the Department of Transportation on and along the highway to identify and communicate the potential hazards related to motorized mixed use.
- Notify the Commissioner of the California Highway Patrol and review their opinion.
- Approximate Implementation Cost: \$ 4500  
*This does not account for the additional long-term annual maintenance cost increase associated with maintaining these critical safety corridors.*
- Expected risk:

**Crash probability:** ☐ High ☒ Med ☐ Low

**Crash severity:** ☒ High ☐ Med ☐ Low

**Alternative 3:** Designate the road as “open to all motor vehicles”, including highway-legal and non-highway-legal vehicles. Downgrade the road segments in accordance with maintenance level 2 standards. This would require removing culverts and ditches, reconstructing the template and narrowing the roadway.

- Based on the quality of the road, the amount of thru traffic, the Forest Highway status, and the change from the rest of the arterial route, this change would not be consistent with the road management objectives.
- Work with Fruit Growers Supply Company to make necessary adjustments to existing agreements.
- Approximate Implementation Cost: \$ 18,000 (~\$45k per mile)
- Expected risk

**Crash probability:** ☐ High ☐ Med ☒ Low

**Crash severity:** ☐ High ☒ Med ☐ Low

**Alternative 4:** Construct trail segments to allow non-highway-legal vehicles to bypass the road and access adjacent maintenance level 2 roads.

- The terrain in this area is relatively gentle and would provide for a parallel trail system. However, avoiding segment 1 will require another agreement to construct a trail on private land.
- Approximate implementation cost: \$4000 (~ \$10,000 per mile)

*This does not include the planning, agreements with private landowners, and long term maintenance costs associated with a new NFS trail.*

**Crash probability:** ☐ High ☐ Med ☒ Low

**Crash severity:** ☐ High ☐ Med ☒ Low

#### **Final Comments:**

Signing on national forest system roads will conform to the standards presented in the FS sign and poster guidelines (available @ [http://fsweb.wo.fs.fed.us/eng/roads\\_trails/signs\\_05/index.htm](http://fsweb.wo.fs.fed.us/eng/roads_trails/signs_05/index.htm)).

In addition, roads managed under the Highway Safety Act, including the study segments here, must comply with the standards in the MUTCD (available @ <http://mutcd.fhwa.dot.gov/>).

According to the Sign and Poster Guidelines for the Forest Service (2005):

The following priorities are to be used to minimize the potential conflicts of mixed use:

- Provide separate facilities.
- Separate use periods. Roads may be designated for separate use periods such as season, weekday/weekend, or day/night. Notify the public of the locations, effective dates, times, and duration that the roads may or may not be used. Provide appropriate signs as shown in Chapter 3A.
- Manage concurrent use.

Upon designation and prior to allowing any mixed use, the Forest Supervisor is responsible for appropriately signing and mapping the route such that the dual traffic use is clear to all users.

# Maps & Photos:

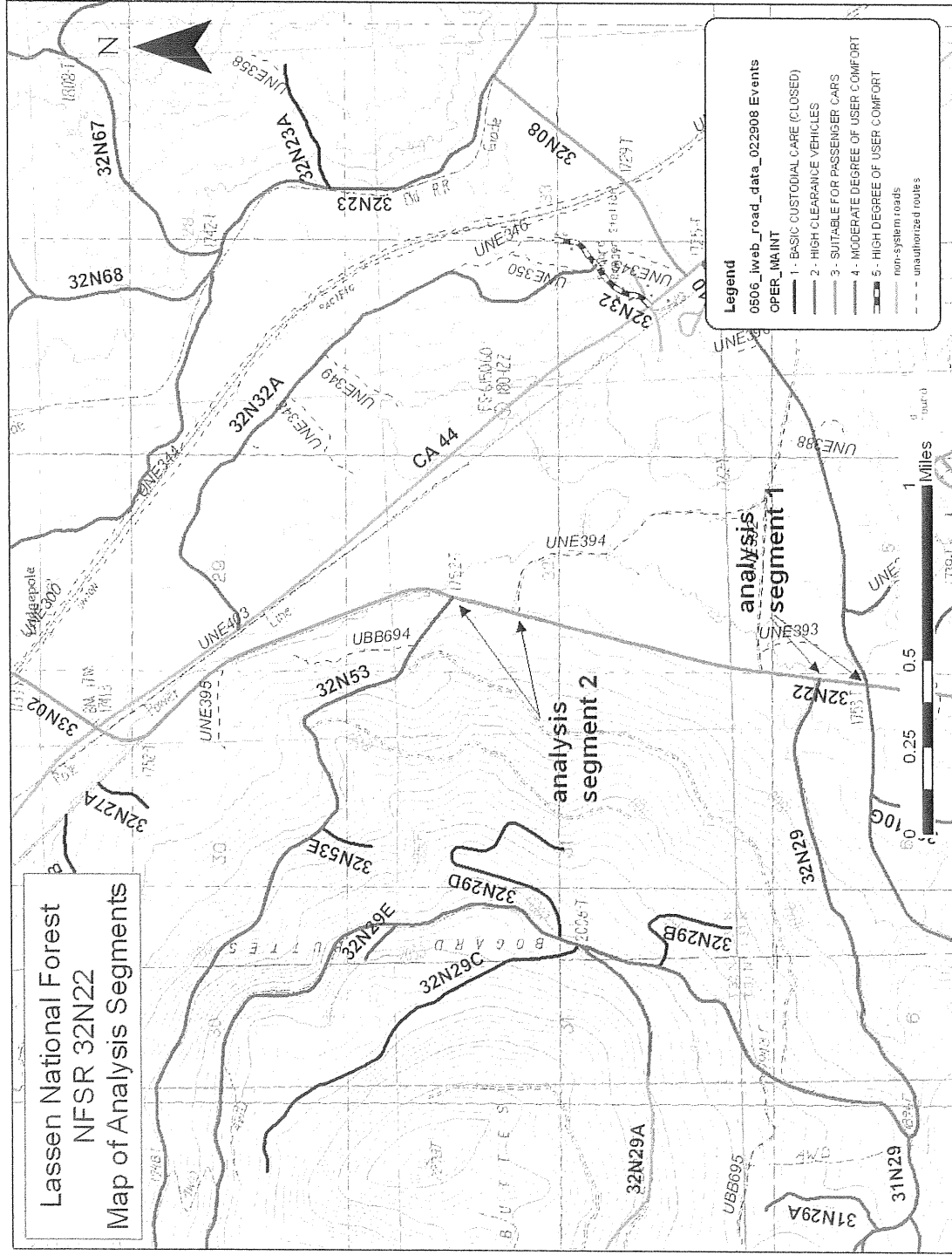


Figure 1: Map of road segments analyzed.





**Figure 2: Looking towards segment 1 (left), with the intersection of NFSR 32N53 on the right.**



**Figure 3: Looking down study segment 1.**



Figure 4: Looking at study segment 2 (straight), with the intersection of NFSR 32N20Y on the right.



Figure 5: Forest route identification and road destination signing, NFSR 32N22 at the intersection with 32N29.



Figure 6: Looking at study segment 2 (straight), across the intersection with NFSR 32N10.

*Chris Bielecki*

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Prepared by:  
Chris Bielecki, Supervisory Civil Engineer



***Engineering Report:***

Lassen National Forest

Eagle Lake Ranger District

Analysis of

National Forest System Road (NFSR)

**# 32N60**

for Motorized Mixed Use Designation

Forest: Lassen

District: Almanor

Road Number: 32N60

Road Name: Grays Flat

**Introduction:** The Grays Flat Road is located west of Bogard Buttes, and connects California State Highway Route 44 with NFSR 32N09. The study segments are currently managed by LNF as open only to highway-legal vehicles. The road segment was recommended in the LNF Travel Analysis (2008) for an engineering analysis of motorized mixed use. The purpose of this engineering analysis is to investigate the potentials, and associated risks, for transporting both highway-legal vehicles (motor vehicles, including the operators, that are licensed or certified for general operation on public roads within the State) and non-highway-legal vehicles (motor vehicles, including the operators, that are not licensed or certified for general operation on public roads within the State) from the beginning termini to the end termini. The LNF Travel Analysis (June 2008) identified this road section as a connection for recreational off-highway vehicle (OHV) loop opportunities on the adjacent road network, of which a portion is currently managed as open to non-highway-legal vehicle use.

**Study Segment road data from the forest transportation atlas:**

Segment 1                      Beginning Mile Post: 1.5      Ending Mile Post: 3.2

Segment 2                      Beginning Mile Post: 4.6      Ending Mile Post: 5.2

*The following is applicable to both study segments:*

Traffic Service Level: ☐ A ☐ B ☒ C ☐ D

Objective Maintenance Level: ☐ 1 ☐ 2 ☒ 3 ☐ 4 ☐ 5

Operational Maintenance Level: ☐ 1 ☐ 2 ☒ 3 ☐ 4 ☐ 5

Maintenance by: **Forest Service (FS)**

Non-Forest Service ROW or jurisdiction? ☐ Yes ☒ No

Any road use agreements, maintenance agreements, or other encumbrances?

☒ Yes ☐ No

Description of agreements or encumbrances:

***The first segment is located on Fruitgrowers Supply Company land. The Forest Service possesses an unlimited exclusive easement over this portion of private land to manage NFSR 32N60.***

Subject to Highway Safety Act? ☒ Yes ☐ No

Non-highway-legal vehicles currently permitted? ☐ Yes ☒ No

Would motorized mixed use be consistent with State and local laws? ☒ Yes  
☐ No

The proposed segment would be consistent with California Vehicle Code (CVC), Combined Use Highways Designation (CVC Division 16.5, Chapter 2, Article 1, Section 38026) if limited to less than 3 consecutive miles on maintenance level 3+ roadways. Based on the CVC and Forest Service Region 5 guidelines, the designation of motorized mixed use requires California Highway Patrol notification prior to designation. Based on the response from the CHP commissioner, the Forest may reconsider the decision to designate MMU and/or may adjust mitigation measures needed for implementation.



Description of road management objectives (RMOs), existing use, and proposed use:

The road currently serves as a collector road and provides access to NFS lands and private lands south of California State Highway Route 44.

The road has traditionally served commodity extraction, fire suppression, and recreation.

Most of the year it is currently managed as open only to highway legal traffic; however, when snow-covered the road serves as a winter recreation route open to ATVs, 4WDs, skiers and over-snow vehicles (including snowmobiles). The study segment portion of the road is considered a highway by the forest service and is managed in accordance with the Highway Safety Act.

The study segment is proposed for designation of motorized mixed use to allow both highway-legal and non-highway-legal vehicles to utilize the roadway. Operators of any motor vehicle would be required to be in possession of a valid state driver's license.

General Considerations:

All motor vehicle operators need to be cognizant of the applicable state laws, and how they pertain to each age group, vehicle type, and national forest system road classification (see next bullet).

Through authorities delegated by the Secretary, the Forest Service may restrict or control use to meet road management objectives (36 CFR 212.5). The LNF currently manages this road as a highway, in accordance with the Highway Safety Act. The road is therefore subject to the provisions of the California Vehicle Code (CVC) for highways.

State OHV Regulations: any motor vehicle must have a street-legal license plate to operate on highways. To operate on public lands, off of highways, motor vehicles must have either a street-legal license plate or a red sticker or a green sticker. For more information, see the CA State Parks Off-Highway Motor Vehicle Recreation site, available @ <http://ohv.parks.ca.gov/>

California has:

- requirements for ATV safety
- conditions for operating ATVs
- OHV equipment requirements
- OHV operation requirements



## Summary of Findings:

Implementing the universal mitigation measures, especially improved signing and better communication, will reduce crash probability.

Road mitigation should be prioritized regardless of mixed use, along with implementing a comprehensive communication, management, and enforcement plan. Associated implementation costs will depend on the designated allowed use for the road.

The study segment is managed in accordance with the assigned operational maintenance level 3 standard, and transitions from a higher standard road (near PL 318) to a lower standard road (north of the intersection with NFSR 29N65).

The surfacing is generally reconditioned on an annual basis. The road is maintained to a standard allowing efficient passenger car through traffic at speeds of 40 mph for reasonable and prudent drivers. Based on speeds and their associated risk for crash severity, designating the road as open only to highway-legal vehicles will provide the lowest crash probability and severity.

## Factors Considered:

### 1. Operator considerations:

- Based on engineering judgment and experience/observation on other national forest management units, the LNF has an above average standard of road. Culverts are common drainage features on maintenance level 2 roads and standard on maintenance level 3 roads. Often roads on this national forest could be classified one maintenance level higher.
- Allowing non-highway-legal vehicles to use the road segments can involve both non-highway-legal equipment and non-licensed operators, including children.
- In California, children under the age of 18 must take a prescribed safety course, be under direct supervision of an adult possessing appropriate safety certificate, or possess the appropriate safety certificate in order to operate an ATV. In addition, children under the age of 14 cannot operate an ATV without direct supervision by parent, guardian, or authorized adult.
- The Lassen National Forest currently manages this road as a highway, in accordance with the Highway Safety Act. The road is subject to the provisions of the California Vehicle Code (CVC) for highways.
- The current use on NFSR 32N60 appears to be consistent with state law and forest policy for operational maintenance level 3 roads.

- The road is inappropriately signed with vertical fiberglass markers.
- The road is not signed at the intersection with SR-44.
- The study segment could serve as a bypass or alternative to NFSR 32N10 for those traveling between SR-44 and Silver Lake.
- On both segments there was evidence of recent forest vegetation treatments; haul would have occurred on this route.

## 2. Crash history:

At the time of this analysis, there are no records of vehicle crashes on this road.

## 3. Traffic volume and type:

Non-highway-legal vehicles:

☐ < 12 inch tread width   ☐ < 50 inch tread width   ☐ >50 inch tread width

Highway-legal vehicles:

☐ < 12 inch tread width   ☐ < 50 inch tread width   ☐ >50 inch tread width

☐ Passenger cars   ☐ Commercial vehicles   ☐ Recreation vehicles (RV's)

Vehicle distribution from a 1.75 hour observation, beginning Sunday 6/29/08 @ 1030 and ending @ 1215.

No vehicles encountered

4. Speed - Anticipated average speed (85<sup>th</sup> percentile):

The speed varies, depending on the roadway conditions. The 85th percentile would be estimated at:

Segment 1: 40 mph (30 mph on steeper grades)

Segment 2: 35 mph

Speeds are based on observation, vehicular operation, and engineering judgment. Straightaways allow for higher speeds.

5. Road surface type:

Segment 1: The traveled way was surfaced with worn aggregate and had a width of 15 - 18 feet. The road surface appeared recently reconditioned.

Segment 2: The traveled way was surfaced with worn aggregate with significant fines. The road was well maintained and smooth, with a width of approximately 16'.

6. Intersections with other roads and trails:

Study segment 1 begins at the intersection with NFSR 32N73Y, the loop road which connects at the beginning and end of the segment. The intersection with NFSR 32N53 is visible for less than 20' before encountering. The 4-way intersection at the end involves NFSR 32N73Y crossing; this maintenance level 2 road lacks appropriate entrance treatments and the condition can lead to higher merging speeds.

Connecting maintenance level 2 roads lack the appropriate entrance treatments needed to provide for the appropriate traffic management strategies (discourage or prohibit passenger cars – *or* – accept or discourage high-clearance vehicles). The current intersections may result in higher traffic merging speeds.

7. Other roadway factors:

- Roadway alignment was adequate for the assigned maintenance level.
- Summer and fall seasons will experience peak use, winter and spring can bring snowy and icy conditions along with snowmobile traffic.

- Segment 1 includes a hill climb with surface washboarding.

#### 8. Roadside conditions:

- Seg 1: gentle terrain, raised road with ditches, ditches overgrown with brush, double ditches and leadouts drains encountered. Snowbrush encroachment, moderate short sections of ponderosa pine up to 3' diameter inside the roadway.
- Seg 2: snowbrush and manzanita encroachment from growth in ditches limits visibility.

#### 9. Risk without mitigation:

Segment 1:

Crash probability: ☐ High ☒ Med ☐ Low

Crash severity: ☒ High ☐ Med ☐ Low

Crash probability was assessed based on factors including:

- Operator considerations, traffic volume, rates of speed, alignment, sight distance, traveled way surface and width, drainage, roadside conditions.

Crash severity was assessed based on factors including:

- Roadway geometry (embankments, slopes, horizontal and vertical alignments), speed, traffic types and difference in vehicle sizes, difference in speeds of OHVs and full-size passenger vehicles, potential path and objects encountered if a vehicle left the traveled way.

### Alternatives and Mitigation Measures:

Alternatives and mitigation measures are presented to assist with safe road management. They are to be considered, should the agency have the appropriate time, workload, and funding based on competing priorities.

For all situations, the following mitigation measures apply:

- Clear communication and education to the visitors on allowed uses, safe motor vehicle use, and natural resources (informational signing and kiosks, maps, website, etc.).
- Improved route identification signing. Repair and replace devices as needed; replace inappropriate signs.
- Clear brush, especially along curves, to improve sight distance.
- Combine the appropriate enforcement measures with the allowed uses for the road.
- Coordinate with other agencies to improve enforcement consistency.
- Utilize a monitoring program to better determine the appropriate management strategy for the types of use, new technologies, changes in visitor demands, and resource protection measures.

In addition, these mitigation measures would apply to the following alternatives. Although the following alternatives are not comprehensive for the situation, they represent the most likely and/or practical options based on engineering judgment.

**Alternative 1:** Designate the road segment as “open to highway-legal vehicles only”. Manage the road in accordance with maintenance level 3 standards.

- Maintain all roadway signing to MUTCD standards.
- Consider designing new trails, a new trailhead, and/or a new camping area to provide better opportunities for non-highway-legal motor vehicle traffic to access the area and the adjacent maintenance level 2 roads.
- Approximate Implementation Cost: \$ 0
- Expected risk:

Crash probability: ☐ High ☐ Med ☒ Low

Crash severity: ☐ High ☒ Med ☐ Low

**Alternative 2:** Designate the road segments as “open to all motor vehicles”, including highway-legal and non-highway-legal vehicles.

- Recognize that this situation would involve different allowed uses and would complicate communication and enforcement.
- Improve education and enforcement communication to explain the complexities of various allowed uses on the road.
- Install appropriate signs of a type approved by the Department of Transportation on and along the highway to identify and communicate the potential hazards related to motorized mixed use.
- Notify the Commissioner of the California Highway Patrol and review their opinion.
- Approximate Implementation Cost: \$ 4500
- Expected risk:

**Crash probability:** ☐ High ☐ Med ☒ Low

**Crash severity:** ☒ High ☐ Med ☐ Low

**Alternative 3:** Designate the road as “open to all motor vehicles”, including highway-legal and non-highway-legal vehicles. Downgrade the road segment in accordance with maintenance level 2 standards. This would require removing culverts and ditches, reconstructing the template and narrowing the roadway.

- Install appropriate route identification signing (vertical fiberglass type)
- Work with Fruitgrowers Supply Company to change road management on their land and downgrade the shared road.
- Approximate Implementation Cost: \$ 76,000
- Expected risk

**Crash probability:** ☐ High ☐ Med ☒ Low

**Crash severity:** ☐ High ☒ Med ☐ Low

**Alternative 4:** Construct trail segments to allow non-highway-legal vehicles to bypass the road and access adjacent maintenance level 2 roads.

- Due to the high volume of maintenance level 2 roads in the vicinity, the amount of new construction would be limited and would provide extensive contiguous OHV opportunities with minimal effort.
- Private land in the area would eliminate the potential to construct parallel trail along segment 1.
- Approximate Implementation Cost: \$10,000 (*covers segment 2 only*).

**Crash probability:** ☐ High ☐ Med ☒ Low

**Crash severity:** ☐ High ☒ Med ☐ Low

#### **Final Comments:**

Signing on national forest system roads should conform to the standards presented in the FS sign and poster guidelines (available @ [http://fsweb.wo.fs.fed.us/eng/roads\\_trails/signs\\_05/index.htm](http://fsweb.wo.fs.fed.us/eng/roads_trails/signs_05/index.htm)).

In addition, roads managed under the highway safety act, including the study segments here, must comply with the standards in the MUTCD (available @ <http://mutcd.fhwa.dot.gov/>).

According to the Sign and Poster Guidelines for the Forest Service (2005):

The following priorities are to be used to minimize the potential conflicts of mixed use:

- Provide separate facilities.
- Separate use periods. Roads may be designated for separate use periods such as season, weekday/weekend, or day/night. Notify the public of the locations, effective dates, times, and duration that the roads may or may not be used. Provide appropriate signs as shown in Chapter 3A.
- Manage concurrent use.

Upon designation and prior to allowing any mixed use, the Forest Supervisor is responsible for appropriately signing and mapping the route such that the dual traffic use is clear to all users.

Maps & Photos:

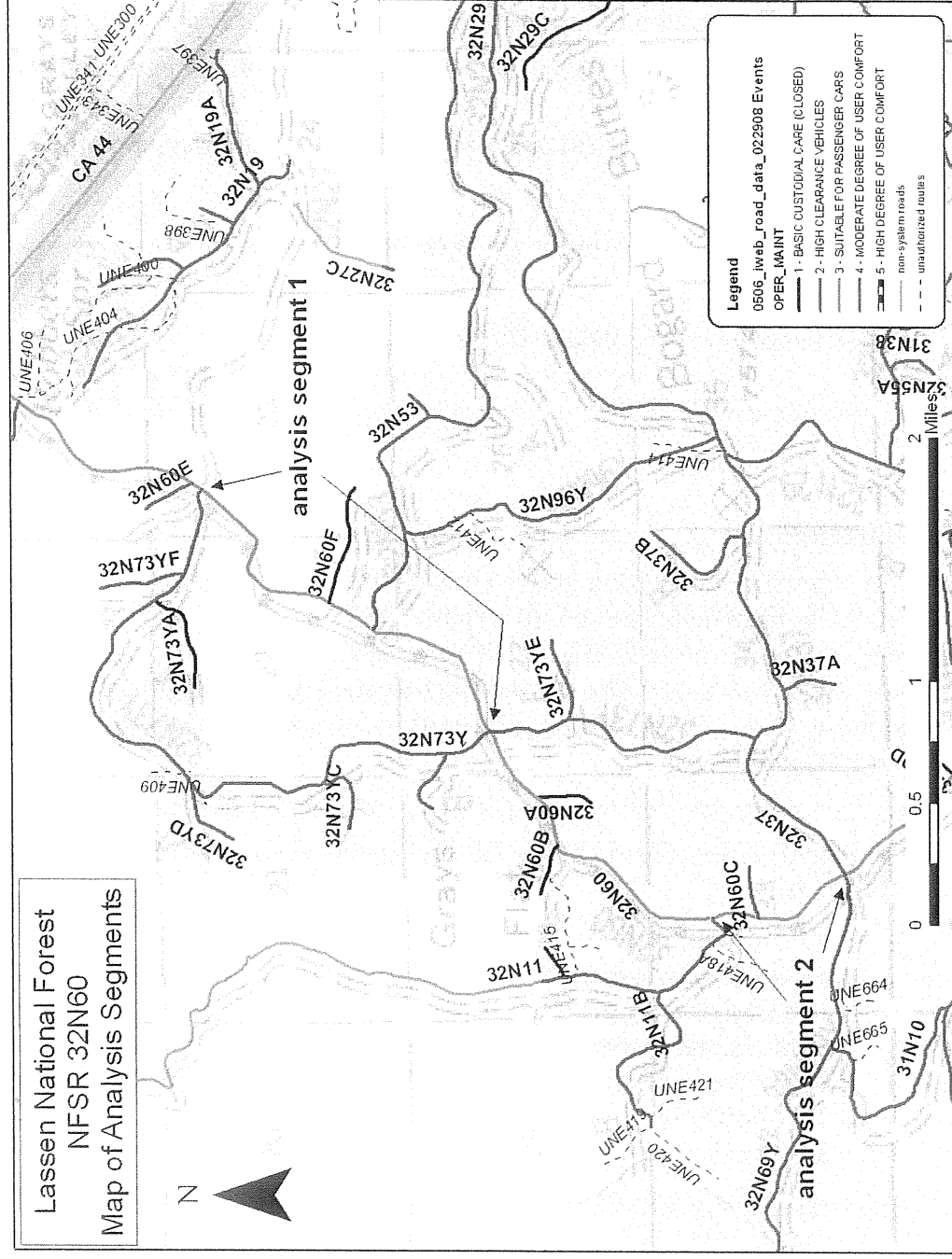
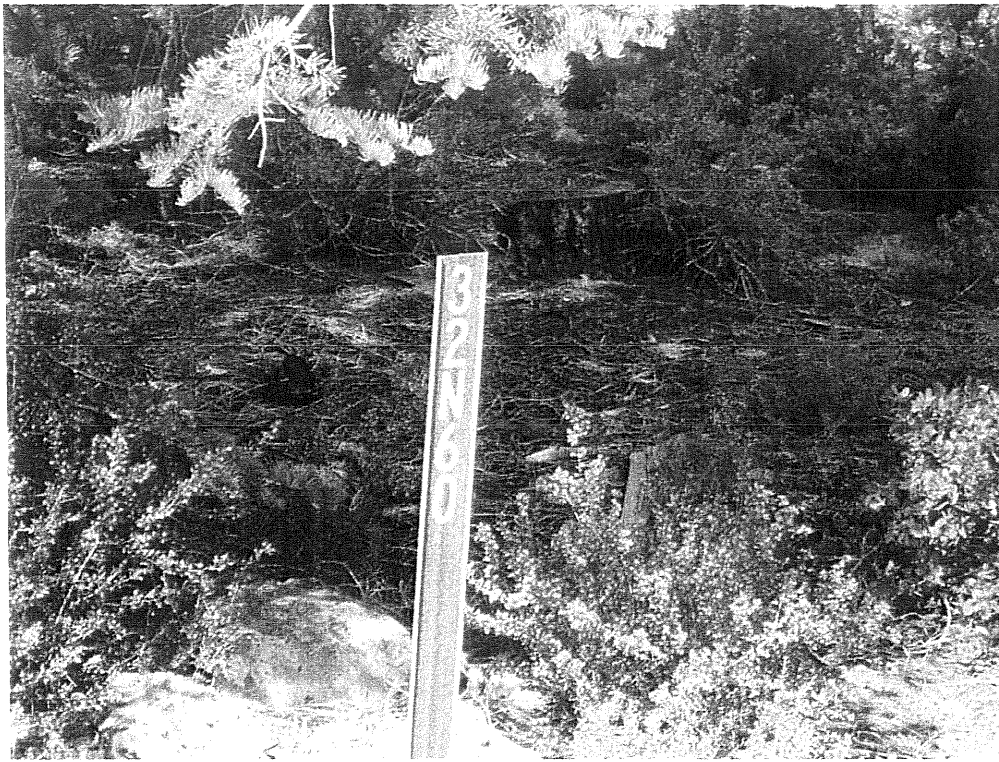


Figure 1: Map of road segments analyzed.





**Figure 2: Incorrect vertical route identification signing.**



**Figure 3: Looking at segment 1, with the intersection of NFSR 32N37Y on the right.**



**Figure 4: Entrance of NFSR 32N37Y.**



**Figure 5: Straightaway, segment 1.**



Figure 6: Private land property boundary, segment 1.



Figure 7: Curve approach, segment 1.





Figure 8: Straightaway, segment 1.

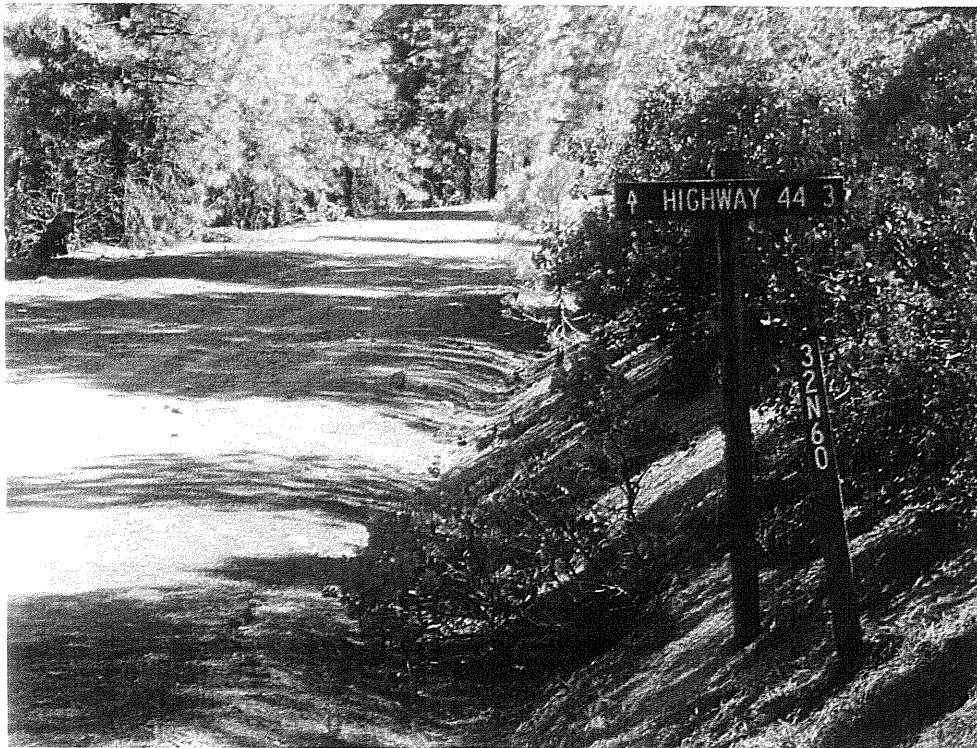
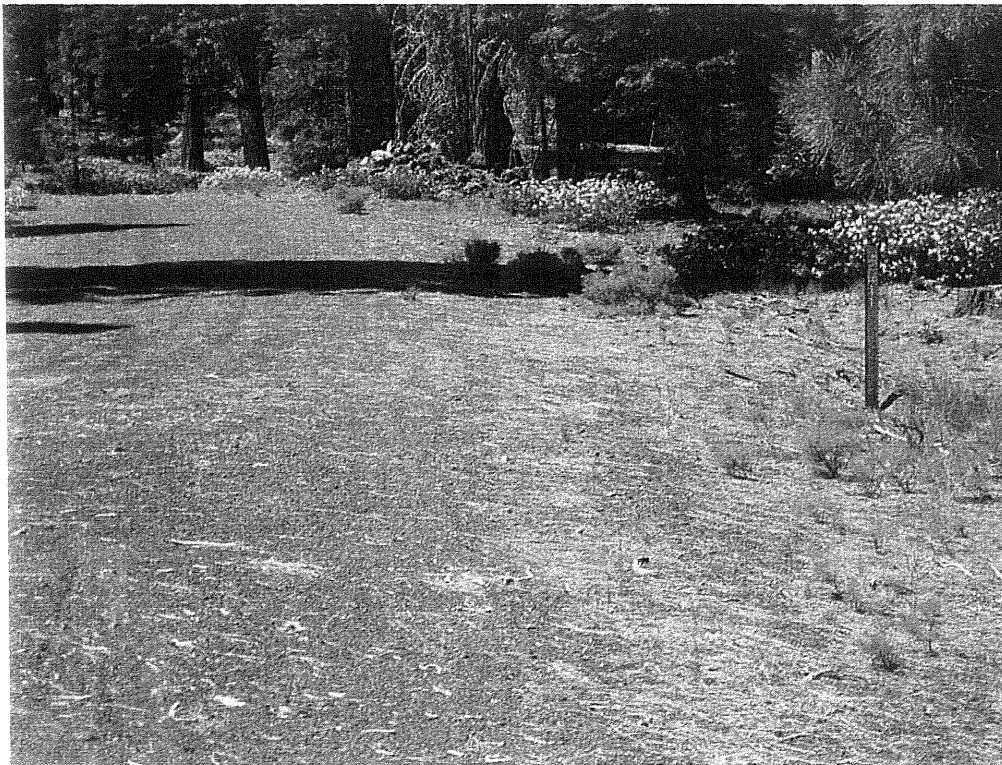


Figure 9: Forest road destination signing, with inappropriate route identification signing.



**Figure 10: Looking at segment 2, with the intersection of NFSR 32N11 on the right.**



**Figure 11: Entrance of NFSR 32N11.**



Figure 12: Alignment along segment 2.



Figure 13: Straightaway, segment 2.





Figure 14: Brush encroachment, segment 2.



Figure 15: End of segment 2, intersection with NFSR 32N37 (left and right).



Figure 16: Forest route destination signing for through traffic, study segment 2.

*Chris Bielecki*

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Prepared by:  
Chris Bielecki, Supervisory Civil Engineer